AUG 11 2003

DIFFUSION BONDED TOOLING WITH CONFORMAL COOLING

Name of Inventors: Joseph V. Bak, et al.

Name & Telephone Number of Person to Call If Necessary:

Scott A. Blake - (419) 255-5900

Serial No. 09/827,046

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Docket No. 1-82091

FIG. 1

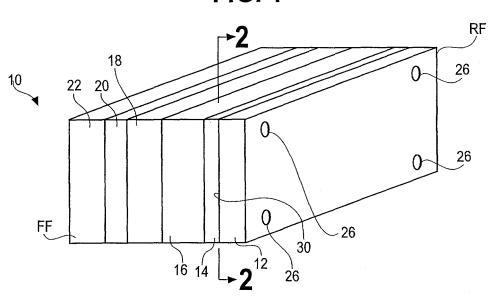
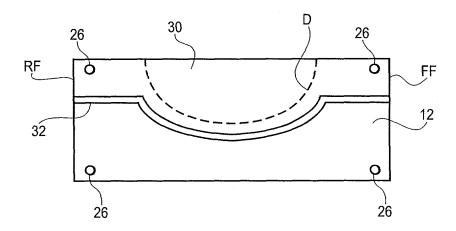


FIG. 2



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FIG. 3

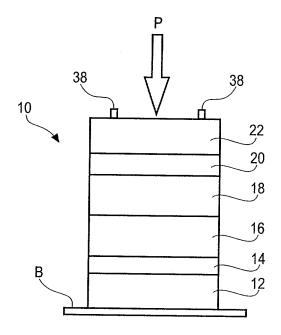
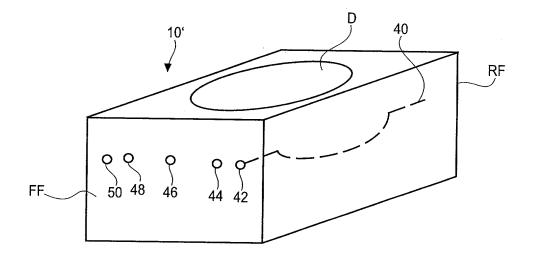


FIG. 4



DIFFUSION BONDED TOOLING WITH CONFORMAL COOLING Name of Inventors: Joseph V. Bak, et al. Name & Telephone Number of Person to Call If Necessary: Scott A. Blake - (419) 255-5900 AUG 1 1 2003 Docket No. 1-82091 Serial No. 09/827,046 RADEMAR! Sheet 3 of 7 3/7 150 130 40 142 150 FIG. 5B 10d 112d 122 11 40d √142c 132c 9 112c 132b 40b 122a 130

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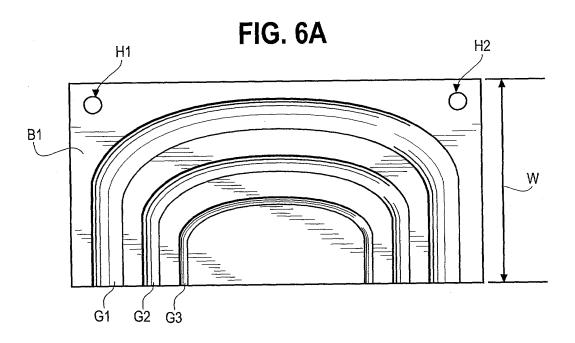
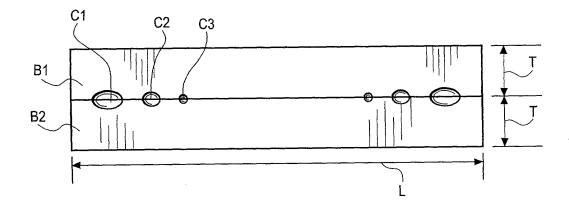


FIG. 6B





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FIG. 7

BOND STRENGTH

BOND PRESSURE, ksi	% DEFORMATION	HEAT TREATED	HARDNESS, Rc	STRENGTH, ksi
0.75	0.13	N	28	53
0.75	0.13	Y	54	45
1.5	1.5	N	30	143
1.5	1.5	Υ	46	189
3.0	15.1	N	28	158
3.0	15.1	Υ	46	219

S7 STRENGTH: ANNEALED = 93ksi HEAT TREATED = 300 KSI

S7 HARDNESS = 50 Rc

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FIG. 8A

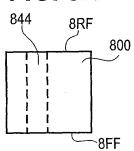


FIG. 9A

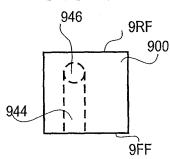


FIG. 8B

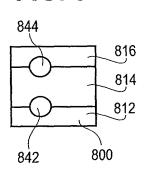


FIG. 9B

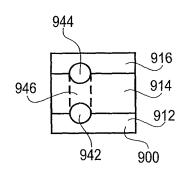


FIG. 10A

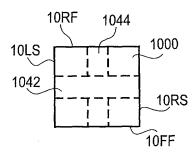


FIG. 11A

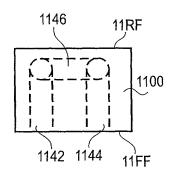


FIG. 10B

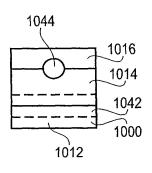
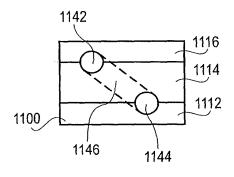


FIG. 11B





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FIG. 12A

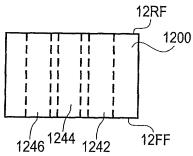


FIG. 13A

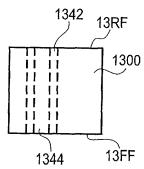


FIG. 12B

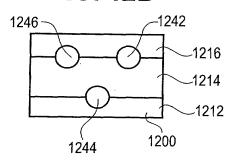


FIG. 13B

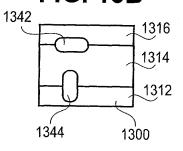


FIG. 14A

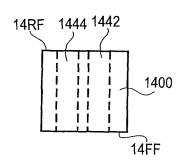


FIG. 15A

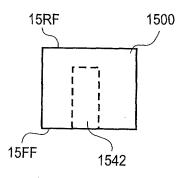


FIG. 14B

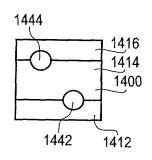


FIG. 15B

